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# MCZ newsletter

MUSEUM OF COMPARATIVE ZOOLOGY

## James J. McCarthy to Succeed A.W. Crompton as MCZ Director

After 12 years of dedicated service, Director A.W. Crompton will resign the directorship of the MCZ as of June 30 to pursue full-time teaching and research as Alexander Agassiz Professor of Zoology. The new director, James J. McCarthy, Alexander Agassiz Professor of Oceanography and an authority on marine productivity, has been at Harvard since 1974.



*A.W. Crompton*

Under Crompton's leadership, several significant developments have enhanced the MCZ's teaching and research programs.

A policy was adopted that would ensure that in future years all curators would hold a joint professorial appointment. This had been established for curators of invertebrate paleontology, who held joint professorial appointments in the Geology Department but had never been fully implemented for curators closely aligned with the Biology Department.

A five-story laboratory building and experimental laboratories at the

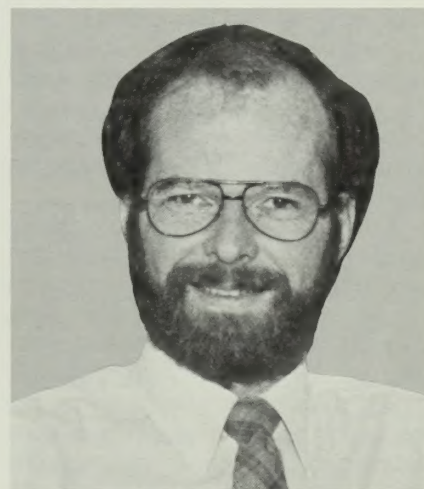
field station facility in Bedford, Massachusetts were constructed. The new wing, originally planned, and the field station acquired, by previous director Ernst Mayr, have made possible the hiring of teaching staff in the areas of population genetics, behavior, marine biology, oceanography, environmental physiology, functional anatomy, and vertebrate development.

Of the ten systematic collections of major animal groups, five have been rehoused and reorganized with the help of grants from the National Science Foundation. The career position of Curatorial Associate for specialists to maintain the collections was established and eight of the ten departments now have one or more such staff members. Additional support staff was allocated to the majority of the MCZ departments. The eleventh major collection, the MCZ Library, has undergone complete renovation and the rare books have been secured and catalogued. There was a dramatic increase in sponsored research and the diversity of graduate students, postdoctoral fellows, and visiting professorial appointments.

In the area of Public Programs, the Friends of the MCZ have grown from 80 in 1970 to over 600 active members in 1982. Several of the exhibit halls have been refurbished and public education programs were initiated in 1975.

Crompton is looking forward to relinquishing his directorial duties for the first time since 1956, when he became Director of the South African Museum in Cape Town. Before arriving at the MCZ, Crompton was Director of the Peabody Museum of

Natural History at Yale University from 1965-70. He will continue his research on the transition of reptiles to mammals some 200 million years ago and the comparative biology of feeding in mammals. He will also continue to teach the structure and function of vertebrates and vertebrate paleontology. He is planning a sabbatical year in 1983-4 which may include a trans-Atlantic sail with his wife, Ann.



*James J. McCarthy*

New director James J. McCarthy foresees the next decade as "a period of stability in which we can strengthen the interchange among scientists in related fields and better develop our representation of animal biology." Because of current economic conditions, McCarthy does not envisage the next decade to be another period of great physical growth.

McCarthy's research focuses on the availability of nitrogen nutrients to determine the productivity of the oceans. As reported previously in the

*Continued on next page*



## New Appointment in Herpetology



**James L. Knight** has been appointed Curatorial Associate in Herpetology as of December 1, 1981. A specialist in snakes, Knight is completing a master's thesis at the University of Kansas on the systematics and natural history of *Tretanorhinus nigroluteus*, a Central American water snake.

Knight is delighted to be working in the MCZ's herpetology collection and library, the most important in scope and diversity in the New World and possibly outranked globally only by the British Museum. He notes that the weakest part of the collection is in the local northeast fauna and plans to supplement this area of the collection. With research travel funds drying up and geopolitics complicating international collecting, this would seem to be an ideal time to concentrate on snake hunting in New England.

Knight's addiction started around the age of seven, when he was a "boy snaker", a human subspecies long recognized by herpetologists. These boys typically grow up in the country; Knight spent his early years in an unusually snaky part of southwest Oklahoma and later moved to central Kansas where hundreds of square miles of flat-rock hillsides provided a fertile playground for the boys who spent all their free time

turning them over. "Flipping rocks was just like opening Christmas presents," recalls Knight. "You didn't always get what you wanted but sometimes what you found was pretty neat."

Knight served in the infantry in the Vietnam war and kept his sanity by collecting snakes. "It was easy to find snakes when you had an entire rifle company helping you to look," he says, "I tried to lend a new meaning to the term 'search and destroy.'" His extensive collection of cobras and bamboo vipers were unfortunately left behind when he returned because the military claimed that the alcohol preservative posed a fire

hazard on the flight home.

During his three-and-a-half years as a graduate student at the University of Kansas, Knight worked for the animal care unit and was responsible for the poisonous snakes which were part of a study on bloodpooling in arboreal species.

Aside from caring for the special collections and herpetological library, Knight will pursue his research on snake systematics and ecology. Openly marveling at his good fortune in landing at the MCZ, Knight says: "Between the library and the snake room, I could happily spend the rest of my life counting scales."

## Visitor



**Dr. Ai-yun Tai**, Associate Professor at the Institute of Zoology, Academia Sinica, People's Republic of

China, is spending a year in Professor **Herbert W. Levi's** laboratory in the MCZ's Invertebrate Department to broaden her knowledge of Crustacea, especially crabs, her area of specialization.

The specific purpose of her visit is to compare the fauna of crabs in different areas of the Indo-Pacific region from the MCZ collection. She is also studying the comprehensive MCZ crustacea collections as part of her systematic-phylogenetic studies.

Tai was a participant in the joint meeting of six zoological societies in Dallas in December. She found the personal communication and contact with many scholars and specialists in her own field extremely stimulating. She hopes to initiate a similar meeting in China of international crustacea specialists. Tai will spend some time studying the crustacea collection at the Smithsonian Institution.

## New MCZ Director

*Continued from first page*

*MCZ Newsletter*, he is engaged in a major cooperative study of the Gulf Stream rings to determine the mechanisms of ocean circulation. "McCarthy's approach to research is indicative of the new direction of the MCZ," says Crompton. "It is important to have a director who is taking a broad look at the total environment—who is able to integrate different aspects of biology rather than concentrate only on isolated parts of

the whole. That's what modern museums are all about."

A 1966 graduate of Gonzaga University, McCarthy earned his Ph.D. at Scripps Institution of Oceanography in 1971. He held research appointments at Scripps and Johns Hopkins University before arriving at Harvard as Assistant Professor in 1974. He was appointed to his present professorial position in 1980.

McCarthy follows in the footsteps of second MCZ director Alexander Agassiz, son of founder Louis, who was one of the first American oceanographers.



## MCZ Library Reports

### Rare Books Secured

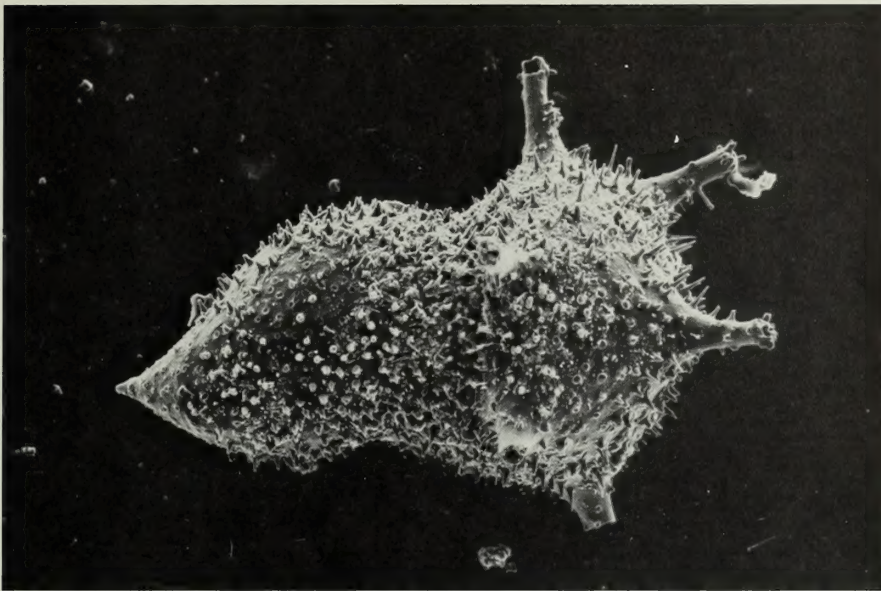
The MCZ's outstanding collection of rare books and serials are now securely housed and recorded in an accurate short-title catalog designed to prevent any future unauthorized manipulation of records. The MCZ Rare Book Inventory Project was carried out by **Reed A. Boland** under the supervision of Librarian **Eva S. Jonas** and made possible by a generous gift to the Library by **Robert Goelet**, a member of the Faculty of the MCZ. "This was a necessary improvement in response to the much-publicized loss of rare books and plates," according to Jonas.

### Grants Received

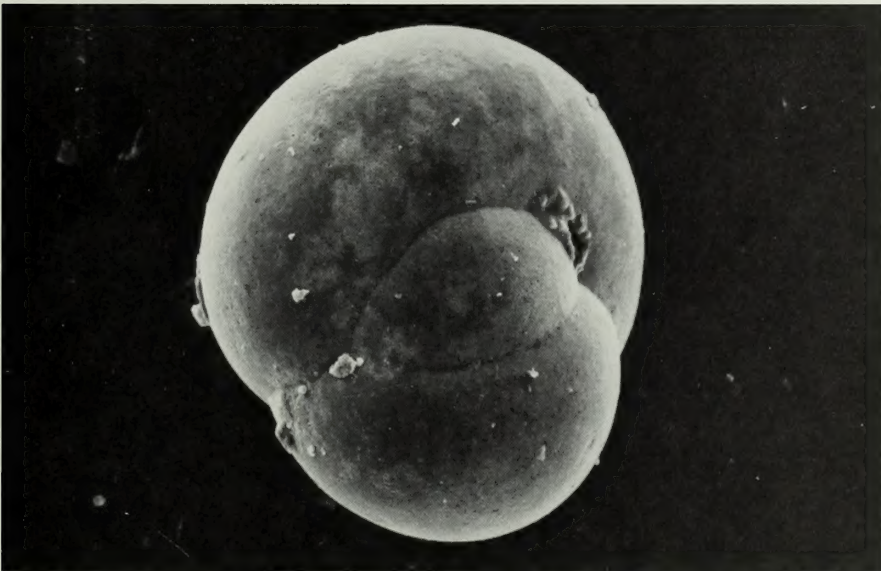
Two grants were received recently from the fund created in the Harvard College Library from the proceeds of the first edition of *How to Use Biological Abstracts* by Eva Jonas. One in the amount of \$3,000 will be used for the improvement of public services in the Library and the second, in the amount of \$1,500, has been used for the development and production of the second edition. An automatic slide-tape projector has been purchased and with the help of the remaining funds, instructional slides and slide tapes will be produced to improve reference services in the Library. Two slide tapes are already available, one to instruct new users on how to find a serial, and the other on how to find a book in the MCZ Library.

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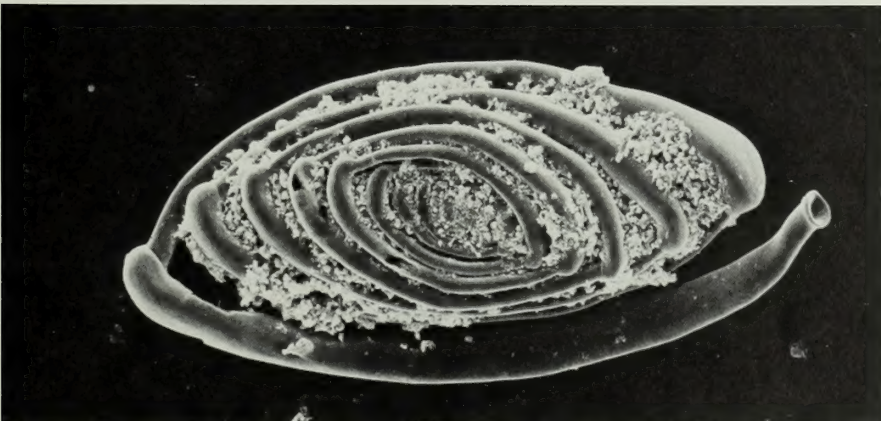
Editor: Gabrielle Dundon  
Photographer: A.H. Coleman



*New foram species, as yet unnamed, from the mound area (Enlarged 100 x)*



*This is a representative of an unnamed species; as yet, its taxonomic affinity within the foraminifera is undetermined. (Enlarged 250 x)*



*This species, constructed like a coiled spring of the mineral calcite, is aptly named *Spiroloculina fragilis*. (Enlarged 140 x)*



# Robert E. Silberglied 1946-1982



The Air Florida crash on January 13 in Washington claimed the life of Dr. Robert E. Silberglied, an Associate of the MCZ who was Assistant Professor of Biology and Assistant Curator of Entomology from 1973 to 1978 and Associate Professor of Biology and Hessel Associate Curator of Lepidoptera in the MCZ from 1978 to 1981. Silberglied was also Staff Scientist (Research Entomologist) at the Smithsonian Tropical Research Institute and divided his time between the MCZ and his research site on Panama's Barro Colorado Island.

Silberglied's diverse research interests ranged from the systematics and evolution of the Lepidoptera to insect sensory physiology, behavior, and ecology. Most recently, using the common butterflies of the genus *Anartia* (Nymphalidae), Silberglied conducted research in Panama on the function of color and pattern, on spermatophore transfer, predator damage, and population dynamics. The ultraviolet patterns on butterfly wings visible to insects was the subject of another long-term research project. Silberglied was also interested in the diverse adaptation and general natural history of arthropods

## Second NSF Grant to Insect Collections

A new grant of \$307,296 from the National Science Foundation will make possible the continued improvement of the MCZ's insect collections, which are among the richest and historically most significant in North America. They contain over 5,500,000 specimens and the primary types of over 29,500 species.

According to **Ronald J. McGinley**, Assistant Curator of Entomology and Assistant Professor of Biology: "The first grant, carried out during the five-year period 1975-79, was primarily aimed at external renovations. This one is for internal renovations, a systematic reordering of

and in defensive adaptations in beetles. The Galapagos Islands, where Silberglied conducted entomological research for six months in 1970, were an abiding interest. He accompanied the Friends of the MCZ on a Galapagos expedition in 1977.

Under his care, the MCZ's Lepidoptera collections underwent the first phase of a major renovation including the re-housing of the specimens in steel cabinets and expansion of space. The large holding of papered material were repackaged to enable them to be stored with the pinned specimens. This work is being continued by Dr. **M. Deane Bowers**.

Professor *emeritus* **Frank M. Carpenter** remembers Silberglied's far-ranging and boundless enthusiasm for all aspects of biology and his encyclopedic knowledge. "Bob is especially to be remembered for his excellent teaching at Harvard, at both undergraduate and graduate levels, and for his patience and understanding in his contacts with the students."

"Bob was a rarity," according to **Professor E. O. Wilson**, Curator of Entomology. "He had a love of what he was doing that went well beyond his career and the challenges that he saw in science. He just loved nature and insects and knowledge and he spent all of his time studying and telling other people about what he knew. He was one of the most extraordinarily generous people I have ever met."

the contents of the shiny new cabinets provided by the first grant, at the rate of a collection per year."

The new grant will provide for additional curatorial staff to work on renovating the collections since the current curatorial associate and assistants are fully employed in the day-to-day running of this large department and processing the rapidly-escalating number of loans (almost 100% increase in the last 10 years). The MCZ will renovate a room and provide stipends for visiting specialists to work on the major collections in the following order: Year 1: Diptera; Year 2: Hymenoptera; Year 3: Lepidoptera. Funding for Years 4 and 5 for work on the Coleoptera collection is dependent upon the hiring of a coleopterist to the staff. The MCZ is committed to making this appointment when the current overall deficit is reduced.

## Lepidoptera Collection Donated to the MCZ

The MCZ's Entomology Department recently received the Lepidoptera collection of **Charles Kimball** (Harvard class of 1919) who died on March 4, 1982. The Kimball collection is composed primarily of moths although it includes some butterflies and numbers over 27,000 specimens. "This is an extremely valuable addition to the MCZ," according to Assistant Professor **M. Deane Bowers**, Hessel Assistant Curator of Lepidoptera, "as the collection is in excellent condition with most specimens identified. It is particularly strong in some moth groups not well-represented in the MCZ collection."

Kimball was well known for his work on the Lepidoptera of Florida and also collected extensively on Cape Cod where he and his wife were living at the time of his death. He was the recent recipient of the John Abbott award for his contributions to entomology in the southern United States.



# Galapagos Rift Finds Subject of Student Research Projects

The unexpected discoveries of the two Galapagos Hydrothermal Expeditions conducted by Woods Hole Oceanographic Institution in 1977 and 1979 are providing fertile new areas for MCZ graduate student research. **Colleen Cavanaugh** is investigating the biological processes of the giant tube worm *Riftia pachyptila* while **Anthony Arnold**, with assistance from **Felicita d'Escrivan**, is concentrating on the foraminifera fauna.

The Woods Hole research team, including MCZ Professor **Ruth D. Turner**, were able to enter a region which had hitherto eluded human exploration two-and-a-half kilometers under the ocean surface. In the rift zone between the Cocos and Nazca plates, in hot vents with temperatures of up to 20°C, they discovered a mysterious underwater oasis of teeming life. The obvious success of the spectacular array of clams, mussels, crabs, fish, and tube worms that were found in the "Rose Garden", as it was dubbed, was puzzling. How could these organisms thrive in their totally dark environment? This was certainly no place for photosynthesis.

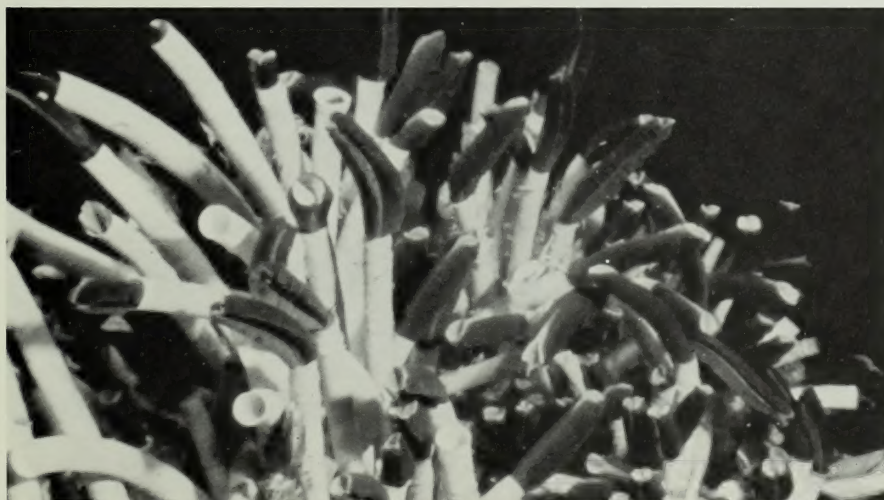
Cavanaugh was particularly intrigued by perhaps the most bizarre members of this strange new fauna—the huge clusters of giant (up to six feet long) red-tipped tube

worms. How could these organisms flourish without what would seem to be the most basic essentials—mouths and guts? During a Harvard lecture by the Smithsonian's Dr. Meredith L. Jones in March 1980, she jumped from her seat and to the hypothesis that the worms depend on symbiotic chemoautotrophic sulfur bacteria for their nourishment.

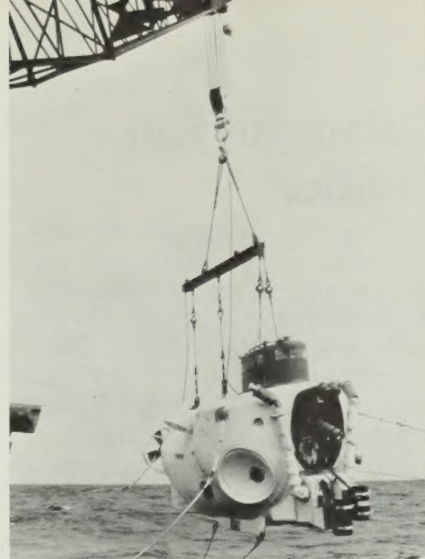


Colleen Cavanaugh

Jones had dissected the trophosome, the tissue that fills the worm's trunk region, and found crystals which turned out to be sulfur. Cavanaugh, who has a combined background in zoology and microbial ecology, had been working on a term paper on the importance of chemoautotrophy in the marine environment, i.e., the function of sulfur-oxidizing bacteria which oxidize



The giant red-tipped tube worms found in enormous clusters in the hydrothermal vent area of the Galapagos rift.



Research submersible DSV Sea Cliff, a sister sub to Alvin, being lowered for deep-sea exploration.

reduced inorganic sulfur compound to produce energy and to fix carbon dioxide into organic compounds. The question posed by Jones' tube worm studies prompted her to hypothesize that there exists a symbiotic relationship between the sulfur-oxidizing bacteria and the mouthless, gutless tube worm: the bacteria produce organic compounds which are an internal food source for the worm and the bacteria gets its required nutrients through the worm's blood without having to move from its fixed place.

Following up on this first insight, Cavanaugh and others (as reported in *Science*\*) have examined the trophosome through the scanning and transmission electron microscopes and confirmed the presence of bacteria. Other researchers, including Horst Feldeck at Scripps Institute of Oceanography, have identified enzymes characteristic of carbon dioxide fixation in the trophosome.

The process does not appear to be limited to tube worms; Cavanaugh's studies reveal that this symbiosis may also occur in bivalves living in sulfide-rich mud. Five species, including the giant clam *Clyptogenia magnifica* from the hot vent region, have now been shown to contain bacteria.

Cavanaugh is currently studying the enzymes of carbon dioxide fixation and sulfur metabolism and isolating the bacteria in *Solemya velum*, an Atlantic coast bivalve known to have a small gut.

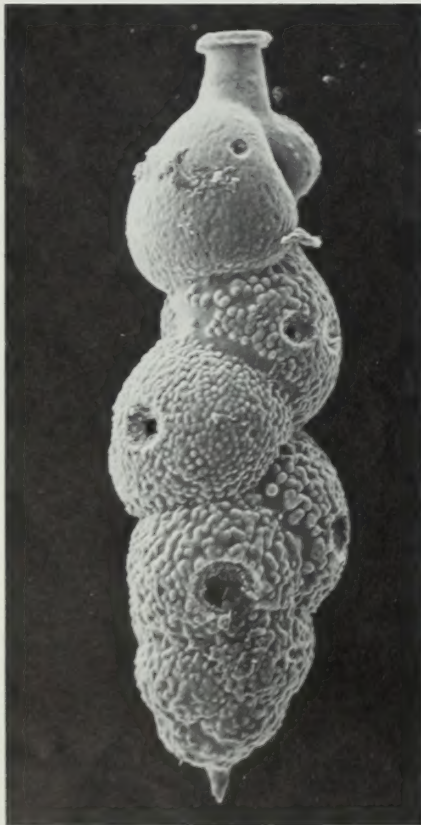
\*July 17, 1981, Vol. 213, pp. 340-2



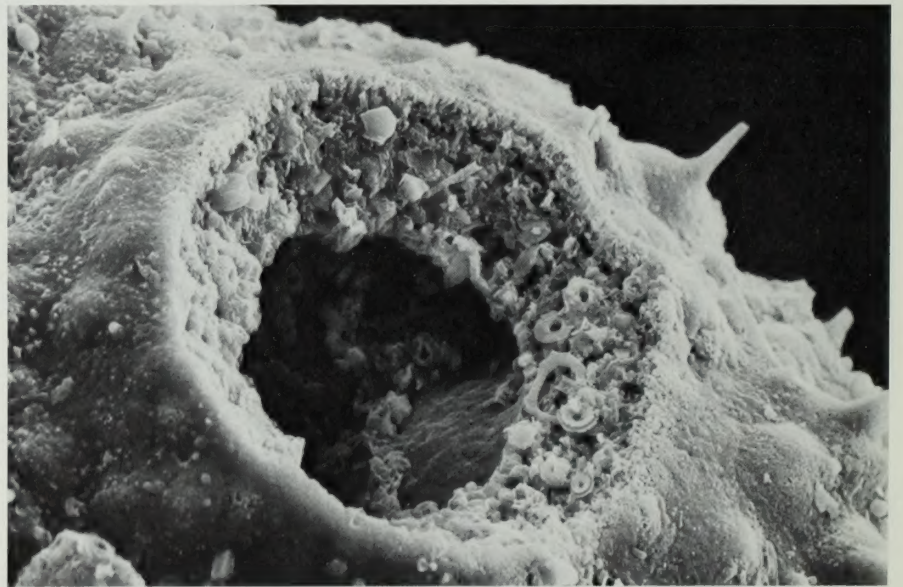
## Galapagos Rift Studies

Along the Galapagos rift axis, the *Alvin* Team discovered numerous hydrothermally-deposited mounds ranging in height from less than a meter to over 20 meters. These mounds range from 4 to 10°C and are composed of sediment covered by a thin ferromanganese crust.

This environment is host to a strange and diverse community of foraminifera, tiny chambered organisms which are related to amoebas but have shells. They are ubiquitous world-wide and, in terms of their contribution to the global biomass, are exceeded only by nematodes and bacteria. While there are about 350 living and fossil species, there are less than 40 species of living planktonic foraminifera; the benthic or deep-sea forms number more than 10,000 named species. With the aid of the scanning electron microscope, Anthony Arnold, graduate student in invertebrate paleontology, and Felicity d'Escrivan, research assistant, are studying the several new endemic forms collected from the vent region.



Felicity d'Escrivan and Anthony Arnold of the Invertebrate Paleontology Department confer on their joint foraminifera project. Behind them is a display of greatly-enlarged scanning electron microscope photographs of their research subjects.



Close-up of one of the snail-made holes (Enlarged 1200 x)

← This chambered foram has been predated upon by a snail in corn-on-the-cob fashion. (Enlarged 120 x)

Scanning electron micrographs by Ed Seling



# Joseph Charles Bequaert

## 1886-1982

Dr. Joseph Charles Bequaert, former MCZ Curator of Recent Insects and Alexander Agassiz Professor, died on January 12, 1982 in Amherst, Massachusetts.

Born in Belgium and a graduate of the University of Ghent, Dr. Bequaert spent four years conducting botanical explorations in Zaïre (then the Belgian Congo) before being appointed Research Associate in Congo Zoology at the American Museum of Natural History in 1917. He became a United States citizen in 1921, and was appointed Assistant Professor of Tropical Medicine at Harvard Medical School from 1925-1945. He became Curator of Recent Insects at the MCZ in 1945 and in 1951 was appointed Alexander Agassiz Professor for a five-year term. Upon his Harvard retirement, he continued his teaching and research activities at the University of Houston and subsequently moved to Tucson, Arizona, where he was associated with the departments of zoology and entomology of the University of Arizona.

Bequaert's research interests were exceptionally far-ranging. As a botanist he conducted extensive research and field exploration on the taxonomy and ecology of the mosses and flowering plants at the Belgian Congo. He was an authority on medical entomology, on the taxonomy of ticks, on the taxonomy and ethology of the Hymenoptera, especially the social wasps, and on the systematics of the horseflies and related families. His prodigious contributions to the MCZ's insect collections include substantial additions to the Diptera and Hymenoptera collections.

Bequaert was also a serious student and collector of mollusks and an important though unofficial member of that department. Besides giving the MCZ over 10,000 lots of mollusks with specimens totaling over 100,000, he took over the task of curating the collections of African land and freshwater mollusks, one of the

world's largest African collections. Many of his papers on these African mollusks were written with the curator, **William J. Clench**.

"Affectionately called 'Uncle Joe' by the many young students then at the MCZ, Dr. Bequaert was available to advise and help at all times," recalls Curator *emeritus* Clench. "He was an incredible linguist (said he

grew up on the streets of Belgium speaking four languages) and was always willing to help translate difficult passages in many of the European languages."

"He was a delightful man," according to Professor *emeritus* **Frank M. Carpenter**, "with extraordinary exuberance, enthusiasm, and a great hearty laugh."



*Joseph C. Bequaert, collecting in Zaïre, 1934*

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## Friends of the MCZ Travel Program

Upcoming trips include: a new trip to see right whales in the Bay of Fundy (August 29-September 4, 1982); Baja whale-watching, the perennial favorite (January 28-February 4, 1983); a new expanded Baja trip circumnavigating the peninsula and including visits to the remote islands in the Sea of Cortez (March 5-19, 1983); Tanzania camping safaris in January/February and May/June, 1983; and a complete tour of the Gal-

apagos Islands, including Tower (June 14-28, 1983).

A brochure for the Bay of Fundy has already been mailed to Friends and is filling rapidly; a brochure describing the other trips will be sent in early June.

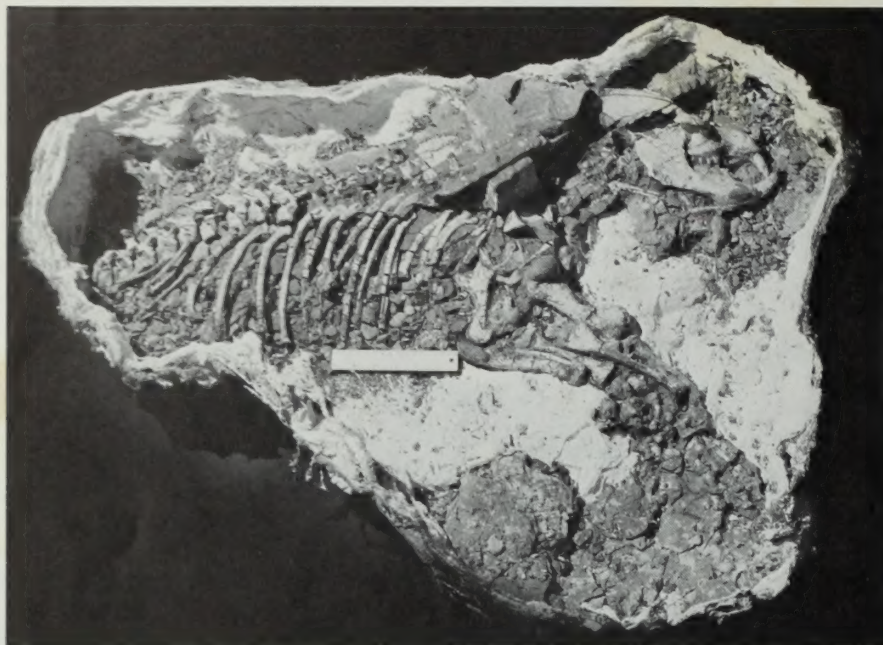
Provincetown whale-watching weekends on the Dolphin Fleet continue to be especially popular; several Friends have made these a regular part of their annual spring activities.



## Almost-Complete Tritylodontid Found

This completely-articulated specimen of a tritylodontid was found by

Charles R. Schaff of the MCZ's Vertebrate Paleontology Department on



last summer's expedition into the Kayenta formation of northeast Arizona. These herbivorous mammal-like reptiles which survived the general extinction in the Triassic (180 million years ago) and lived into the Jurassic (135 million years ago) reached the size of a collie and had large tusk-like teeth which could have been used for defense or for tearing up plant materials.

The Kayenta tritylodontids were a diverse group, probably including three different species. Numerous skulls have been found ranging from the size of a quarter to this one, which measures almost a foot long.

Professor Farish A. Jenkins, Jr. speculates that this exquisitely-preserved specimen was buried soon after death, escaping the damage usually inflicted by scavengers. The missing pelvis and hind limbs were probably eroded out prior to the discovery.

## A New MCZ Literary Tradition?

While considerable attention has been paid to this year's new books by noted members of the MCZ scientific community Ernst Mayr<sup>1</sup>, E.

O. Wilson<sup>2</sup>, and Stephen Jay Gould<sup>3</sup> (who also became the first MCZ staff member to be the subject of a *Newsweek*<sup>4</sup> cover story), another

emerging literary tradition has yet to be discovered. Hoping to follow in the path of Vladimir Nabokov, who was a butterfly specialist in the Insect Department from 1941 to 1948, admissions attendant Philip Kimball has had his novel, *Shootin' Snooker*, accepted for publication by E.P. Dutton.

A study of how the lives of short-grass prairie community are affected by their fragile environment, Kimball's work explores their collective psyche, haunted by dust-bowl memories and living in the fear of a recurrence.

Kimball, a native of Oklahoma who studied at the Universities of Kansas, Heidelberg, Berkeley and Stanford and who formerly taught literature at the University of Bonn and Spellman College in Atlanta, has found his job at the MCZ to be almost ideal for his literary endeavors. "My best writing hours are in the morning when I have to be at my MCZ post," he says, "but other than that it has been perfect." The book will appear next year after revisions are completed.

<sup>1</sup>*The Growth of Biological Thought*, Harvard University Press  
<sup>2</sup>*Genes, Mind, and Culture*, with Charles J. Lumsden, Harvard University Press

<sup>3</sup>*The Mismeasure of Man*, W.W. Norton and Co.

<sup>4</sup>March 29, 1982



Philip Kimball with young visitor.



